



RB-125-SEQ SEQUENCE LISTING

Sequence File Name: RB125seq.txt

<110> Horwath, K. L. and Easton, C. M.

<120> Nucleic Acid Sequences Encoding Type III Tenebrio Antifreeze Proteins and Method for Assaying Activity.

<130> RB-125-SEQ

<140> 09/876,796

<141> 2001-06-07

<150> 60/210,446

<151> 2000-06-08

<160> 48

<170> Microsoft Word

<210> 1

<211> 19

<212> PRT

<213> Tenebrio molitor

<223> N-terminal sequence of protein Tm 12.86

<400> 1

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1 5 10 15

Gln Gln Val

19

<210> 2

<211> 576

<212> DNA

<213> Tenebrio molitor

<223> Non-his-tagged, signal plus, Tm 13.17

<400> 2

gtggatccaa agaattcggc acgagactac taag atg aag ttg ctc 46
Met Lys Leu Leu
-15tgt tgt cta atc tcc ctc att ctg ttg gtc,aca gtt cag gcc ctg 91
Cys Cys Leu Ile Ser Leu Ile Leu Leu Val Thr Val Gln Ala Leu
-10 -5 1acc gag gca caa att gag aaa ctg aac aag atc agc aaa aaa tgt 136
Thr Glu Ala Gln Ile Glu Lys Leu Asn Lys Ile Ser Lys Lys Cys
5 10 15caa aat gaa agt gga gtg tcg caa gag atc ata acc aaa gct cgc 181
Gln Asn Glu Ser Gly Val Ser Gln Glu Ile Ile Thr Lys Ala Arg
20 25 30

aac ggt gac tgg gag gac gat cct aaa ctg aaa cgc caa gtt ttt	226
Asn Gly Asp Trp Glu Asp Asp Pro Lys Leu Lys Arg Gln Val Phe	
35	40
	45
tgc gtg gcc agg aac gcc ggt ctg gcc acg gaa tcg gga gag gtg	271
Cys Val Ala Arg Asn Ala Gly Leu Ala Thr Glu Ser Gly Glu Val	
50	55
	60
gtg gtc gac gtg ttg agg gag aag gtg agg aag gtc act gac aac	316
Val Val Asp Val Leu Arg Glu Lys Val Arg Lys Val Thr Asp Asn	
65	70
	75
gac gaa gaa act gag aaa atc atc aat aag tgc gcc gtc aag aga	361
Asp Glu Glu Thr Glu Lys Ile Ile Asn Lys Cys Ala Val Lys Arg	
80	85
	90
gat act gtt gaa gag acg gtg ttc aat act ttc aaa tgt gtc atg	406
Asp Thr Val Glu Glu Thr Val Phe Asn Thr Phe Lys Cys Val Met	
95	100
	105
aaa aac aag cca aag ttc tca cca gtt gat tga accaccacga	449
Lys Asn Lys Pro Lys Phe Ser Pro Val Asp	
110	115
ctagtagatg gttcaaatgg ttttgtgtttac atataaaat aaagtgtttc	499
tgtatgtaaaa aaaaaaaaaa aaaaaaaaaa aactcgagag tattctagag	549
cggccgcggg cccatcgaaa tccacccc	576

<210> 3
<211> 134
<212> PRT
<213> Tenebrio molitor

<223> Precursor Protein for Tm 13.17

<400> 3	
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	-5
Gln Ala Leu Thr Glu Ala Gln Ile Glu Lys Leu Asn Lys Ile Ser Lys	
1	5
	10
Lys Cys Gln Asn Glu Ser Gly Val Ser Gln Glu Ile Ile Thr Lys Ala	
15	20
	25
	30
Arg Asn Gly Asp Trp Glu Asp Asp Pro Lys Leu Lys Arg Gln Val Phe	
35	40
	45
Cys Val Ala Arg Asn Ala Gly Leu Ala Thr Glu Ser Gly Glu Val Val	
50	55
	60
Val Asp Val Leu Arg Glu Lys Val Arg Lys Val Thr Asp Asn Asp Glu	
65	70
	75

Glu Thr Glu Lys Ile Ile Asn Lys Cys Ala Val Lys Arg Asp Thr Val
80 85 90

Glu Glu Thr Val Phe Asn Thr Phe Lys Cys Val Met Lys Asn Lys Pro
95 100 105 110

Lys Phe Ser Pro Val Asp
115

<210> 4
<211> 116
<212> PRT
<213> Tenebrio molitor

<223> Mature Protein for Tm 13.17

<400> 4
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Gln Asn Glu Ser Gly Val Ser Gln Glu Ile Ile Thr Lys Ala Arg Asn
20 25 30

Gly Asp Trp Glu Asp Asp Pro Lys Leu Lys Arg Gln Val Phe Cys Val
35 40 45

Ala Arg Asn Ala Gly Leu Ala Thr Glu Ser Gly Glu Val Val Val Asp
50 55 60

Val Leu Arg Glu Lys Val Arg Lys Val Thr Asp Asn Asp Glu Glu Thr
65 70 75 80

Glu Lys Ile Ile Asn Lys Cys Ala Val Lys Arg Asp Thr Val Glu Glu
85 90 95

Thr Val Phe Asn Thr Phe Lys Cys Val Met Lys Asn Lys Pro Lys Phe
100 105 110

Ser Pro Val Asp
115

<210> 5
<211> 481
<212> DNA
<213> Tenebrio molitor

<223> Non-His-tagged, Signal plus, Clone 2.2

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-15 -10

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Ile Val Ile Gly Ala Gln Ala Leu Thr Asp-Glu Gln Ile Gln Lys

-5	1	5	
agg aac aag atc agc aaa gaa tgc cag cag gtg tcc gga gtg tcc Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val Ser			136
10	15	20	
caa gag acg atc gac aaa gtc cgc aca ggt gtc ttg gtc gat gat Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp			181
25	30	35	
ccc aaa atg aag aag cac gtc ctc tgc ttc tcg aag aaa act gga Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly			226
40	45	50	
gtg gca acc gaa gcc gga gac acc aat gtg gag gta ctc aaa gcc Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala			271
55	60	65	
aag ctg aag cat gtg gcc agc gac gaa gag gtg gac aag atc gtg Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val			316
70	75	80	
cag aag tgc gtg gtc aag aag gcc aca cca gag gaa acg gct tat Gln Lys Cys Val Val Lys Ala Thr Pro Glu Glu Thr Ala Tyr			361
85	90	95	
gac acc ttc aag tgt att tac gac agt aaa cct gat ttc tct cct Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro			406
100	105	110	
att gat taa ttgtttgtta tttgactgaa ttttgacaat aaaggtaata Ile Asp			455
115			
tcgttatgtta aaaaaaaaaaaa aaaaaaa			481
<210> 6			
<211> 482			
<212> DNA			
<213> Tenebrio molitor			
<223> Non-His-tagged, Signal plus, Clone 2.3			
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-5	1	5	
agg aac aag atc agc aaa gaa tgc cag cag gtg tcc gga gtg tcc Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val Ser			136
10	15	20	

caa gag acg atc gac aaa gtc cgc aca ggt gtc ttg gtc gac gat	181	
Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp		
25	30	35
ccc aaa atg aag aag cac gtc ctc tgc ttc tcg aag aaa act gga	226	
Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly		
40	45	50
gtg gca acc gaa gcc gga gac acc aat gtg gag gta ctc aaa gcc	271	
Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala		
55	60	65
aag ctg aag cat gtg gcc agc gac gaa gtg gac aag atc gtg	316	
Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val		
70	75	80
cag aag tgc gtg gtc aag aag gcc aca cca gag gaa acg gct tat	361	
Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr		
85	90	95
gac acc ttc aag tgt att tac gac agt aaa cct gat ttc tct cct	406	
Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro		
100	105	110
att gat taa ttgtttgtta tttgactgaa ttttgacaat aaaggtacta	455	
Ile Asp		
115		
tcgttatgaa aaaaaaaaaa aaaaaaaa	482	

<210> 7
<211> 133
<212> PRT
<213> Tenebrio molitor

<223> Precursor Protein for Tm 12.84, Clones 2.2, 2.3, and 7.5

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Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
1 5 10

Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
15 20 25 30

Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
35 40 45

Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn
50 55 60

Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu
65 70 75

Val Asp Lys Ile Val Gln Lys Cys Val Val,Lys Lys Ala Thr Pro Glu

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85

90

Glu Thr Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp
95 100 105 110

Phe Ser Pro Ile Asp
115

<210> 8

<211> 115

<212> PRT

<213> Tenebrio molitor

<223> Mature Protein for Tm 12.84, Clones 2.2, 2.3, and 7.5

<400> 8

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Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val Arg Thr
20 25 30

Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu Cys Phe
35 40 45

Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu
50 55 60

Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp
65 70 75 80

Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr
85 90 95

Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser
100 105 110

Pro Ile Asp
115

<210> 9

<211> 481

<212> DNA

<213> Tenebrio molitor

<223> Non-His-tagged, Signal plus, Clone 3.4

<400> 9

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-15 -10

atc gtc atc gga gct cag gct ctc acc gac gaa cag ata cag aaa 91
Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys
-5 1 5

agg aac aag atc agc aaa gaa tgc cag cag gtg tcc gga gtg tcc	136
Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val Ser	
10 15 20	
caa gag acg atc gac aaa gtc cgc aca ggt gtc ttg gtc gac gat	181
Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp	
25 30 35	
ccc aaa atg aag aag cac gtc ctc tgc ttc tcg aag aaa act gga	226
Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly	
40 45 50	
gtg gca acc gaa gcc gga gac acc aat gtg gag gta ctc aaa gcc	271
Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala	
55 60 65	
aag ctg aag cat gtg gcc agc gac gaa gag gtg gac aag atc gtg	316
Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val	
70 75 80	
cag aag tgc gtg gtc aag aag gcc aca cca gag gaa acg gct tat	361
Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr	
85 90 95	
gac acc ttc aag gtt att tac gac agt aaa cct gat ttc tct cct	406
Asp Thr Phe Lys Val Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro	
100 105 110	
att gat taa ttgtttgtta tttgactgaa ttttgacaat aaaggtacta	455
Ile Asp	
115	
tcgttatgtta aaaaaaaaaaaa aaaaaaa	481

<210> 10
<211> 133
<212> PRT
<213> Tenebrio molitor

<223> Precursor Protein for Clone 3.4

<400> 10
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Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
1 5 10

Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
15 20 25 30

Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
35 40 45

Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn

50 55 60

Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu
65 70 75

Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu
80 85 90

Glu Thr Ala Tyr Asp Thr Phe Lys Val Ile Tyr Asp Ser Lys Pro Asp
95 100 105 110

Phe Ser Pro Ile Asp
115

<210> 11
<211> 115
<212> PRT
<213> Tenebrio molitor

<223> Mature Protein for Clone 3.4

<400> 11
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Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val Arg Thr
20 25 30

Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu Cys Phe
35 40 45

Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu
50 55 60

Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp
65 70 75 80

Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr
85 90 95

Ala Tyr Asp Thr Phe Lys Val Ile Tyr Asp Ser Lys Pro Asp Phe Ser
100 105 110

Pro Ile Asp
115

<210> 12
<211> 482
<212> DNA
<213> Tenebrio molitor

<223> Non-His-tagged, Signal plus, Clone 3.9

<400> 12
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-15	-10	
atc gtc atc gga gct cag gct ctc acc gat gaa cag ata cag aaa 91		
Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys		
-5	1	5
agg aac aag atc agc aaa gaa tgc cag cag gag tcc gga gtg tcc 136		
Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Glu Ser Gly Val Ser		
10	15	20
caa gag acg atc gac aaa gtc cgc aca ggt gtc ttg gtc gac gat 181		
Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp		
25	30	35
ccc aaa atg aag aag cac gtc ctc tgc ttc tcg aag aga act gga 226		
Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Arg Thr Gly		
40	45	50
gtg gca acc gaa gcc gga gac acc aat gtg gag gta ctc aaa gcc 271		
Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala		
55	60	65
aag ctg aag cat gtg gcc agc gac gaa gtg gac aag atc gtg 316		
Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val		
70	75	80
cag aag tgc gtg gtc aag aag gcc aca cca gag gaa acg gct tat 361		
Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr		
85	90	95
gac acc ttc aag tgt att tac gac agt aaa cct gat ttc tct cct 406		
Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro		
100	105	110
att gat taa ttgtttgtta tttgactgaa ttttgacaat aaaggtacta 455		
Ile Asp		
115		
tcgttatgaa aaaaaaaaaaaa aaaaaaaaa 482		

<210> 13
<211> 133
<212> PRT
<213> Tenebrio molitor

<223> Precursor Protein for Clone 3.9

<400> 13
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1 5 10
Glu Cys Gln Gln Glu Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val

15	20	25	30
Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu			
35	40	45	
Cys Phe Ser Lys Arg Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn			
50	55	60	
Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu			
65	70	75	
Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu			
80	85	90	
Glu Thr Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp			
95	100	105	110
Phe Ser Pro Ile Asp			
115			

<210> 14

<211> 115

<212> PRT

<213> Tenebrio molitor

<223> Mature protein for Clone 3.9

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Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys			
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20	25	30	

Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu Cys Phe			
35	40	45	

Ser Lys Arg Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu			
50	55	60	

Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp			
65	70	75	80

Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr			
85	90	95	

Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser			
100	105	110	

Pro Ile Asp
115

<210> 15

<211> 481

<212> DNA

<213> Tenebrio molitor

<223> Non-his-tagged, Signal plus, Clone 7.5

<400> 15

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          Met Lys Leu Leu Leu Cys Phe Ala Phe Ala Ala
          -15           -10

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atc gtc atc gga gct cag gct ctc acc gac gaa cag ata cag aaa      91
Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys
-5                      1                      5

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agg aac aag atc agc aaa gag tgc cag cag gtg tcc gga gtg tcc 136
Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val Ser
    10           15           20

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caa gag acg atc gac aaa gtc cgc aca ggt gtc ttg gtc gac gat 181
 Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp
 25 30 35

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ccc aaa atg aag aag cac gtc ctc tgc ttc tcg aag aaa act gga 226
Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly
        40           45           50

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gtg gca acc gaa gcc gga gac acc aat gtg gag gta ctc aaa gcc 271
Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala
      55          60          65

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cag aag tgc gtg gtc aag aag gcc aca cca gag gaa acg gct tat	361
Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr	
85 90 95	

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gac acc ttc aag tgt att tac gac agt aaa cct gat ttc tct cct 406
Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro
    100           105           110

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att gat taa ttgtttgtt tttggctgaa ttttgcataa aaaggtaacta 455
Ile Asp
115

tcgttatgta aaaaaaaaaaa aaaaaaa 481

<210> 16

211 <211> 681

<212> DNA

<213> Tenebrio molitor

<223> His-tagged, Signal plus, Clone 2.2

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agc ggc ctg gtg ccg cgc ggc agc cat atg gct agc atg act ggt Ser Gly Leu Val Pro Arg Gly Ser His Met Ala Ser Met Thr Gly	-45	-40	-35	141
gga cag caa atg ggt cgc gga tcc gaa ttc gca cga gca aaa atg Gly Gln Met Gly Arg Gly Ser Glu Phe Ala Arg Ala Lys Met	-30	-25	-20	186
aaa ctc ctc ttg tgc ttt gcg ttc gcc gcc atc gtc atc gga gct Lys Leu Leu Cys Phe Ala Phe Ala Ala Ile Val Ile Gly Ala	-15	-10	-5	231
cag gct ctc acc gac gaa cag ata cag aaa agg aac aag atc agc Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser	1	5	10	276
aaa gaa tgc cag cag gtg tcc gga gtg tcc caa gag acg atc gac Lys Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp	15	20	25	321
aaa gtc cgc aca ggt gtc ttg gtc gat gat ccc aaa atg aag aag Lys Val Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys	30	35	40	366
cac gtc ctc tgc ttc tcg aag aaa act gga gtg gca acc gaa gcc His Val Leu Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala	45	50	55	411
gga gac acc aat gtg gag gta ctc aaa gcc aag ctg aag cat gtg Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu Lys His Val	60	65	70	456
gcc agc gac gaa gag gtg gac aag atc gtg cag aag tgc gtg gtc Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys Val Val	75	80	85	501
aag aag gcc aca cca gag gaa acg gct tat gac acc ttc aag tgt Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys Cys	90	95	100	546
att tac gac agt aaa cct gat ttc tct cct att gat taa ttgtttgt Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp	105	110	115	595
tttgactgaa ttttgacaat aaaggtaata tcgttatgt aaaaaaaaaaaaa				645
aaaaaaaaactcg agcaccacca ccaccaccac tgagat				681

<210> 17
<211> 173
<212> PRT

<213> Tenebrio molitor

<223> Precursor Protein with His-tag, Clone 2.2

<400> 17

Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
-55 -50 -45

Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
-40 -35 -30

Gly Ser Glu Phe Ala Arg Ala Lys Met Lys Leu Leu Leu Cys Phe Ala
-25 -20 -15

Phe Ala Ala Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile
-10 -5 1 5

Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val
10 15 20

Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp
25 30 35

Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly Val
40 45 50

Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu
55 60 65 70

Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys
75 80 85

Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys
90 95 100

Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp
105 110 115

<210> 18

<211> 543

<212> DNA

<213> Tenebrio molitor

<223> His-tagged, signal minus, Clone 2.2

<400> 18

ttgttagcgg atggaattcc ctcgtagggg ataatttgtt ttactttaag 50

aaggagatat acc atg ggc agc agc cat cat cat cat cac agc 96
Met Gly Ser Ser His His His His His His Ser
-30 -25

agc ggc ctg gtg ccg cgc ggc agc cat atg gct agc atg act ggt 141
Ser Gly Leu Val Pro Arg Gly Ser His Met Ala Ser Met Thr Gly
-20 -15 -10

gga cag caa atg ggt cgc gga tcc ctc acc gac gaa cag ata cag	186	
Gly Gln Gln Met Gly Arg Gly Ser Leu Thr Asp Glu Gln Ile Gln		
-5	1	5
aaa agg aac aag atc agc aaa gaa tgc cag-cag gtg tcc gga gtg	231	
Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val		
10	15	20
tcc caa gag acg atc gac aaa gtc cgc aca ggt gtc ttg gtc gat	276	
Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp		
25	30	35
gat ccc aaa atg aag aag cac gtc ctc tgc ttc tcg aag aaa act	321	
Asp Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr		
40	45	50
gga gtg gca acc gaa gcc gga gac acc aat gtg gag gta ctc aaa	366	
Gly Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys		
55	60	65
gcc aag ctg aag cat gtg gcc agc gac gaa gag gtg gac aag atc	411	
Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile		
70	75	80
gtg cag aag tgc gtg gtc aag aag gcc aca cca gag gaa acg gct	456	
Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala		
85	90	95
tat gac acc ttc aag tgt att tac gac agt aaa cct gat ttc tct	501	
Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser		
100	105	110
cct att gat taa ctcgagcacc accaccacca ccactgagat	543	
Pro Ile Asp		
115		

<210> 19
 <211> 149
 <212> PRT
 <213> Tenebrio molitor

<223> Mature Protein with His-tag, Clone 2.2

<400> 19
 Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
 -30 -25 -20

Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
 -15 -10 -5

Gly Ser Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
 1 5 10

Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
 15 20 25 30

Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
35 40 45

Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn
50 55 60

Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu
65 70 75

Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu
80 85 90

Glu Thr Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp
95 100 105 110

Phe Ser Pro Ile Asp
115

<210> 20

<211> 682

<212> DNA

<213> Tenebrio molitor

<223> His-tagged, Signal Plus, Clone 2.3

<400> 20

ttgttagcgg atgaaattcc ctcgtagggg ataattttgt ttactttaag 50

aaggagatat acc atg ggc agc agc cat cat cat cat cac agc 96
Met Gly Ser Ser His His His His His His Ser
-55 -50

agc ggc ctg gtg ccg cgc ggc agc cat atg gct agc atg act ggt 141
Ser Gly Leu Val Pro Arg Gly Ser His Met Ala Ser Met Thr Gly
-45 -40 -35

gga cag caa atg ggt cgc gga tcc gaa ttc gca cga gca aaa atg 186
Gly Gln Gln Met Gly Arg Gly Ser Glu Phe Ala Arg Ala Lys Met
-30 -25 -20

aaa ctc ctc ttg tgc ttt gct ttc gcc gcc atc gtc atc gga gct 231
Lys Leu Leu Cys Phe Ala Phe Ala Ala Ile Val Ile Gly Ala
-15 -10 -5

cag gct ctc acc gac gaa cag ata cag aaa agg aac aag atc agc 276
Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser
1 5 10

aaa gaa tgc cag cag gtg tcc gga gtg tcc caa gag acg atc gac 321
Lys Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp
15 20 25

aaa gtc cgc aca ggt gtc ttg gtc gat gat ccc aaa atg aag aag 366
Lys Val Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys
30 35 40

cac gtc ctc tgc ttc tcg aag aaa act gga gtg gca acc gaa gcc	411
His Val Leu Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala	
45 50 55	
gga gac acc aat gtg gag gta ctc aaa gcc-aag ctg aag cat gtg	456
Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu Lys His Val	
60 65 70	
gcc agc gac gaa gaa gtg gac aag atc gtg cag aag tgc gtg gtc	501
Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys Val Val	
75 80 85	
aag aag gcc aca cca gag gaa acg gct tat gac acc ttc aag tgt	546
Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys Cys	
90 95 100	
att tac gac agt aaa cct gat ttc tct cct att gat taa ttgtttgtta	595
Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp	
105 110 115	
tttgactgaa ttttgacaat aaaggtacta tcgttatgaa aaaaaaaaaaa	645
aaaaaaaaactc gagcaccacc accaccacca ctgagat	682

<210> 21						
<211> 173						
<212> PRT						
<213> Tenebrio molitor						
<223> Precursor Protein with His-tag, Clone 2.3						
<400> 21						
Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro						
-55 -50 -45						
Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg						
-40 -35 -30						
Gly Ser Glu Phe Ala Arg Ala Lys Met Lys Leu Leu Leu Cys Phe Ala						
-25 -20 -15						
Phe Ala Ala Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile						
-10 -5 1 5						
Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val						
10 15 20						
Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp						
25 30 35						
Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly Val						
40 45 50						
Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu						
55 60 65 70						

Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys
75 80 85

Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys
90 95 100

Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp
105 110 115

<210> 22

<211> 543

<212> DNA

<213> Tenebrio molitor

<223> His-tagged, Signal minus, Clone 2.3

<400> 22

ttgttagcggttggaaattccctcgttaggggataaattttgtttactttaag 50

aaggagatat acc atg ggc agc agc cat cat cat cat cac agc 96
Met Gly Ser Ser His His His His His His Ser
-30 -25

agc ggc ctg gtg ccg cgc ggc agc cat atg gct agc atg act ggt 141
Ser Gly Leu Val Pro Arg Gly Ser His Met Ala Ser Met Thr Gly
-20 -15 -10

gga cag caa atg ggt cgc gga tcc ctc acc gac gaa cag ata cag 186
Gly Gln Gln Met Gly Arg Gly Ser Leu Thr Asp Glu Gln Ile Gln
-5 1 5

aaa agg aac aag atc agc aaa gaa tgc cag cag gtg tcc gga gtg 231
Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val
10 15 20

tcc caa gag acg atc gac aaa gtc cgc aca ggt gtc ttg gtc gat 276
Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp
25 30 35

gat ccc aaa atg aag aag cac gtc ctc tgc ttc tcg aag aaa act 321
Asp Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr
40 45 50

gga gtg gca acc gaa gcc gga gac acc aat gtg gag gta ctc aaa 366
Gly Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys
55 60 65

gcc aag ctg aag cat gtg gcc agc gac gaa gaa gtg gac aag atc 411
Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile
70 75 80

gtg cag aag tgc gtg gtc aag aag gcc aca cca gag gaa acg gct 456
Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala
85 90 95

tat gac acc ttc aag tgt att tac gac agt aaa cct gat ttc tct 501

Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser
100 105 110

cct att gat taa ctcgagcacc accaccacca ccactgagat 543
Pro Ile Asp
115

<210> 23
<211> 149
<212> PRT
<213> Tenebrio molitor

<223> Mature Protein with His-tag, Clone 2.3

<400> 23
Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
-30 -25 -20

Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
-15 -10 -5

Gly Ser Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
1 5 10

Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
15 20 25 30

Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
35 40 45

Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn
50 55 60

Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu
65 70 75

Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu
80 85 90

Glu Thr Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp
95 100 105 110

Phe Ser Pro Ile Asp
115

<210> 24
<211> 776
<212> DNA
<213> Tenebrio molitor

<223> His-tagged, Signal plus, Tm 13.17

<400> 24
ttgttagcgg atggaattcc ctcgtagggg ataattttgt ttactttaag 50

aaggagatat acc atg ggc agc agc cat cat cat cat cat cac agc Met Gly Ser Ser His His His His His His His Ser	96
-65 -60 -55	
agc ggc ctg gtg ccg cgc ggc agc cat atg gct agc atg act ggt Ser Gly Leu Val Pro Arg Gly Ser His Met Ala Ser Met Thr Gly	141
-50 -45 -40	
gga cag caa atg ggt cgc gga tcc gaa ttc tgg atc caa aga att Gly Gln Gln Met Gly Arg Gly Ser Glu Phe Trp Ile Gln Arg Ile	186
-35 -30 -25	
cgg cac gag act act aag atg aag ttg ctc tgt tgt cta atc tcc Arg His Glu Thr Thr Lys Met Lys Leu Leu Cys Cys Leu Ile Ser	231
-20 -15 -10	
ctc att ctg ttg gtc aca gtt cag gcc ctg acc gag gca caa att Leu Ile Leu Leu Val Thr Val Gln Ala Leu Thr Glu Ala Gln Ile	276
-5 1 5	
gag aaa ctg aac aag atc agc aaa aaa tgt caa aat gaa agt gga Glu Lys Leu Asn Lys Ile Ser Lys Lys Cys Gln Asn Glu Ser Gly	321
10 15 20	
gtg tcg caa gag atc ata acc aaa gct cgc aac ggt gac tgg gag Val Ser Gln Glu Ile Ile Thr Lys Ala Arg Asn Gly Asp Trp Glu	366
25 30 35	
gac gat cct aaa ctg aaa cgc caa gtt ttt tgc gtg gcc agg aac Asp Asp Pro Lys Leu Lys Arg Gln Val Phe Cys Val Ala Arg Asn	411
40 45 50	
gcc ggt ctg gcc acg gaa tcg gga gag gtg gtg gtc gac gtg ttg Ala Gly Leu Ala Thr Glu Ser Gly Glu Val Val Val Asp Val Leu	456
55 60 65	
agg gag aag gtg agg aag gtc act gac aac gac gaa gaa act gag Arg Glu Lys Val Arg Lys Val Thr Asp Asn Asp Glu Glu Thr Glu	501
70 75 80	
aaa atc atc aat aag tgc gcc gtc aag aga gat act gtt gaa gag Lys Ile Ile Asn Lys Cys Ala Val Lys Arg Asp Thr Val Glu Glu	546
85 90 95	
acg gtg ttc aat act ttc aaa tgt gtc atg aaa aac aag cca aag Thr Val Phe Asn Thr Phe Lys Cys Val Met Lys Asn Lys Pro Lys	591
100 105 110	
ttc tca cca gtt gat tga accaccacga ctagtagatg gttcaaattgg Phe Ser Pro Val Asp	639
115	
tgtgctttac atataaaaaat aaagtgtttc tgatgtaaaa aaaaaaaaaaa	689
aaaaaaaaaaa aactcgagag tattctagag cggccgcggg cccatcgttt	739

tccaccctc gagcaccacc accaccacca ctgagat

776

<210> 25
<211> 174
<212> PRT
<213> Tenebrio molitor

<223> Precursor Protein with His-tag, Tm 13.17

<400> 25
Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
-55 -50 -45

Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
-40 -35 -30

Gly Ser Glu Phe Ala Arg Ala Lys Met Lys Leu Leu Cys Cys Leu Ile
-25 -20 -15

Ser Leu Ile Leu Leu Val Thr Val Gln Ala Leu Thr Glu Ala Gln Ile
-10 -5 1 5

Glu Lys Leu Asn Lys Ile Ser Lys Lys Cys Gln Asn Glu Ser Gly Val
10 15 20

Ser Gln Glu Ile Ile Thr Lys Ala Arg Asn Gly Asp Trp Glu Asp Asp
25 30 35

Pro Lys Leu Lys Arg Gln Val Phe Cys Val Ala Arg Asn Ala Gly Leu
40 45 50

Ala Thr Glu Ser Gly Glu Val Val Val Asp Val Leu Arg Glu Lys Val
55 60 65 70

Arg Lys Val Thr Asp Asn Asp Glu Glu Thr Glu Lys Ile Ile Asn Lys
75 80 85

Cys Ala Val Lys Arg Asp Thr Val Glu Glu Thr Val Phe Asn Thr Phe
90 95 100

Lys Cys Val Met Lys Asn Lys Pro Lys Phe Ser Pro Val Asp
105 110 115

<210> 26
<211> 543
<212> DNA
<213> Tenebrio molitor

<223> His-tagged, Signal minus, Tm 13.17

<400> 26
ttgttagcggt atgaaattcc ctcgtagggg ataattttgt ttactttaag 50

aaggagatat acc atg ggc agc agc cat cat cat cat cac agc 96
Met Gly Ser Ser His His His His His Ser

-30	-25	
agc ggc ctg gtg ccg cgc ggc agc cat atg gct agc atg act ggt Ser Gly Leu Val Pro Arg Gly Ser His Met Ala Ser Met Thr Gly		141
-20	-15	-10
gga cag caa atg ggt cgc ggc ctg acc gag gca caa att gag aaa Gly Gln Gln Met Gly Arg Gly Leu Thr Glu Ala Gln Ile Glu Lys		186
-5	1	5
ctg aac aag atc agc aaa aaa tgt caa aat gaa agt gga gtg tcg Leu Asn Lys Ile Ser Lys Lys Cys Gln Asn Glu Ser Gly Val Ser		231
10	15	20
caa gag atc ata acc aaa gct cgc aac ggt gac tgg gag gac gat Gln Glu Ile Ile Thr Lys Ala Arg Asn Gly Asp Trp Glu Asp Asp		276
25	30	35
cct aaa ctg aaa cgc caa gtt ttt tgc gtg gcc agg aac gcc ggt Pro Lys Leu Lys Arg Gln Val Phe Cys Val Ala Arg Asn Ala Gly		321
40	45	50
ctg gcc acg gaa tcg gga gag gtg gtg gtc gac gtg ttg agg gag Leu Ala Thr Glu Ser Gly Glu Val Val Val Asp Val Leu Arg Glu		366
55	60	65
aag gtg agg aag gtc act gac aac gac gaa act gag aaa atc Lys Val Arg Lys Val Thr Asp Asn Asp Glu Glu Thr Glu Lys Ile		411
70	75	80
atc aat aag tgc gcc gtc aag aga gat act gtt gaa gag acg gtg Ile Asn Lys Cys Ala Val Lys Arg Asp Thr Val Glu Glu Thr Val		456
85	90	95
ttc aat act ttc aaa tgt gtc atg aaa aac aag cca aag ttc tca Phe Asn Thr Phe Lys Cys Val Met Lys Asn Lys Pro Lys Phe Ser		501
100	105	110
cca gtt gat tga ctcgagcaccc accaccacca ccactgagat Pro Val Asp		543
115		
<210> 27		
<211> 149		
<212> PRT		
<213> Tenebrio molitor		
<223> Mature Protein with His-tag, Tm 13.17		
<400> 27		
Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro		
-30	-25	-20
Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg		
-15	-10	-5

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<210> 28
<211> 681
<212> DNA
<213> Tenebrio molitor

<223> His-tagged, Signal plus, Clone 3.4

<400> 28
ttgttagcgg atggaattcc ctcgtagggg ataattttgt ttactttaag      50
aaggagatat acc atg ggc agc agc cat cat cat cat cac agc      96
          Met Gly Ser Ser His His His His His His His Ser
          -55                  -50

agc ggc ctg gtg ccg cgc ggc agc cat atg gct agc atg act ggt 141
Ser Gly Leu Val Pro Arg Gly Ser His Met Ala Ser Met Thr Gly
          -45                  -40                  -35

gga cag caa atg ggt cgc gga tcc gaa ttc gca cga gca aaa atg 186
Gly Gln Met Gly Arg Gly Ser Glu Phe Ala Arg Ala Lys Met
          -30                  -25                  -20

aaa ctc ctc ttg tgc ttt gct ttc gcc gcc atc gtc atc gga gct 231
Lys Leu Leu Cys Phe Ala Phe Ala Ala Ile Val Ile Gly Ala
          -15                  -10                  -5

cag gct ctc acc gac gaa cag ata cag aaa agg aac aag atc agc 276
Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser
          1                   5                   10

aaa gaa tgc cag cag gtg tcc gga gtg tcc caa gag acg atc gac 321
Lys Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp

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15	20	25	
aaa gtc cgc aca ggt gtc ttg gtc gac gat ccc aaa atg aag aag Lys Val Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys 30 35 40			366
cac gtc ctc tgc ttc tcg aag aaa act gga gtg gca acc gaa gcc His Val Leu Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala 45 50 55			411
gga gac acc aat gtg gag gta ctc aaa gcc aag ctg aag cat gtg Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu Lys His Val 60 65 70			456
gcc agc gac gaa gag gtg gac aag atc gtg cag aag tgc gtg gtc Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys Val Val 75 80 85			501
aag aag gcc aca cca gag gaa acg gct tat gac acc ttc aag gtt Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys Val 90 95 100			546
att tac gac agt aaa cct gat ttc tct cct att gat taa ttgtttgtta Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp 105 110 115			595
tttgactgaa tttgacaat aaaggacta tcgttatgta aaaaaaaaaaaaa aaaaaaaaactcg agcaccacca ccaccaccac tgagat			645 681
<210> 29			
<211> 173			
<212> PRT			
<213> Tenebrio molitor			
<223> Precursor protein with His-tag, Clone 3.4			
<400> 29			
Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro -55 -50 -45			
Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg -40 -35 -30			
Gly Ser Glu Phe Ala Arg Ala Lys Met Lys Leu Leu Leu Cys Phe Ala -25 -20 -15			
Phe Ala Ala Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile -10 -5 1 5			
Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val 10 15 20			
Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp 25 30 35			

Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly Val
40 45 50

Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu
55 60 65 70

Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys
75 80 85

Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys
90 95 100

Val Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp
105 110 115

<210> 30

<211> 543

<212> DNA

<213> Tenebrio molitor

<223> His-tagged, Signal minus, Clone 3.4

<400> 30

ttgttagcgg atggaattcc ctcgtagggg ataattttgt ttactttaag 50

aaggagatat acc atg ggc agc agc cat cat cat cat cac agc 96
Met Gly Ser Ser His His His His His His Ser
-30 -25

agc ggc ctg gtg ccg cgc ggc agc cat atg gct agc atg act ggt 141
Ser Gly Leu Val Pro Arg Gly Ser His Met Ala Ser Met Thr Gly
-20 -15 -10

gga cag caa atg ggt cgc gga tcc ctc acc gac gaa cag ata cag 186
Gly Gln Gln Met Gly Arg Gly Ser Leu Thr Asp Glu Gln Ile Gln
-5 1 5

aaa agg aac aag atc agc aaa gaa tgc cag cag gtg tcc gga gtg 231
Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val
10 15 20

tcc caa gag acg atc gac aaa gtc cgc aca ggt gtc ttg gtc gac 276
Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp
25 30 35

gat ccc aaa atg aag aag cac gtc ctc tgc ttc tcg aag aaa act 321
Asp Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr
40 45 50

gga gtg gca acc gaa gcc gga gac acc aat gtg gag gta ctc aaa 366
Gly Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys
55 60 65

gcc aag ctg aag cat gtg gcc agc gac gaa gag gtg gac aag atc 411
Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile
70 75 80

gtg cag aag tgc gtg gtc aag aag gcc aca cca gag gaa acg gct 456
Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala
 85 90 95

tat gac acc ttc aag gtt att tac gac agt aaa cct gat ttc tct 501
Tyr Asp Thr Phe Lys Val Ile Tyr Asp Ser Lys Pro Asp Phe Ser
 100 105 110

cct att gat taa ctcgagcacc accaccacca ccactgagat 543
Pro Ile Asp
 115

<210> 31
<211> 149
<212> PRT
<213> Tenebrio molitor

<223> Mature Protein with His-tag, Clone 3.4

<400> 31
Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
 -30 -25 -20

Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
 -15 -10 -5

Gly Ser Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
 1 5 10

Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
 15 20 25 30

Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
 35 40 45

Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn
 50 55 60

Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu
 65 70 75

Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu
 80 85 90

Glu Thr Ala Tyr Asp Thr Phe Lys Val Ile Tyr Asp Ser Lys Pro Asp
 95 100 105 110

Phe Ser Pro Ile Asp
 115

<210> 32
<211> 682
<212> DNA
<213> Tenebrio molitor

<223> His-tagged, Signal plus, Clone 3.9

agc ggc ctg gtg ccg cgc ggc agc cat atg gct agc atg act ggt Ser Gly Leu Val Pro Arg Gly Ser His Met Ala Ser Met Thr Gly	141	
-20	-15	-10
gga cag caa atg ggt cgc gga tcc ctc acc gat gaa cag ata cag Gly Gln Gln Met Gly Arg Gly Ser Leu Thr Asp Glu Gln Ile Gln	186	
-5	1	5
aaa agg aac aag atc agc aaa gaa tgc cag cag gag tcc gga gtg Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Ser Gly Val	231	
10	15	20
tcc caa gag acg atc gac aaa gtc cgc aca ggt gtc ttg gtc gac Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp	276	
25	30	35
gat ccc aaa atg aag aag cac gtc ctc tgc ttc tcg aag aga act Asp Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Arg Thr	321	
40	45	50
gga gtg gca acc gaa gcc gga gac acc aat gtg gag gta ctc aaa Gly Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys	366	
55	60	65
gcc aag ctg aag cat gtg gcc agc gac gaa gaa gtg gac aag atc Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile	411	
70	75	80
gtg cag aag tgc gtg gtc aag aag gcc aca cca gag gaa acg gct Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala	456	
85	90	95
tat gac acc ttc aag tgt att tac gac agt aaa cct gat ttc tct Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser	501	
100	105	110
cct att gat taa ctgcggcacc accaccacca ccactgagat Pro Ile Asp	543	
115		
<210> 35		
<211> 149		
<212> PRT		
<213> Tenebrio molitor		
<223> Mature Protein with His-tag, Clone 3.9		
<400> 35		
Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro		
-30	-25	-20
Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg		
-15	-10	-5
Gly Ser Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys		

1	5	10													
Glu	Cys	Gln	Gln	Glu	Ser	Gly	Val	Ser	Gln	Glu	Thr	Ile	Asp	Lys	Val
15				20				25				30			
Arg	Thr	Gly	Val	Leu	Val	Asp	Asp	Pro	Lys	Met	Lys	Lys	His	Val	Leu
				35				40				45			
Cys	Phe	Ser	Lys	Arg	Thr	Gly	Val	Ala	Thr	Glu	Ala	Gly	Asp	Thr	Asn
				50				55				60			
Val	Glu	Val	Leu	Lys	Ala	Lys	Leu	Lys	His	Val	Ala	Ser	Asp	Glu	Glu
				65			70				75				
Val	Asp	Lys	Ile	Val	Gln	Lys	Cys	Val	Val	Lys	Lys	Ala	Thr	Pro	Glu
				80			85				90				
Glu	Thr	Ala	Tyr	Asp	Thr	Phe	Lys	Cys	Ile	Tyr	Asp	Ser	Lys	Pro	Asp
				95			100				105				110
Phe	Ser	Pro	Ile	Asp											
				115											

<210>	36															
<211>	681															
<212>	DNA															
<213>	Tenebrio molitor															
<223>	His-tagged, Signal plus, Clone 7.5															
<400>	36															
ttgttagcgg	atggaattcc	ctcgtagggg	ataatttgt	ttactttaag											50	
aaggagatat	acc	atg	ggc	agc	agc	cat	cat	cat	cat	cac	agc				96	
	Met	Gly	Ser	Ser	His	His	His	His	His	His	Ser					
					-55						-50					
agc	ggc	ctg	gtg	ccg	ggc	agc	cat	atg	gct	agc	atg	act	ggt		141	
Ser	Gly	Leu	Val	Pro	Arg	Gly	Ser	His	Met	Ala	Ser	Met	Thr	Gly		
					-45			-40					-35			
gga	cag	caa	atg	ggt	cgc	gga	tcc	gaa	ttc	gca	cga	gca	aaa	atg		186
Gly	Gln	Gln	Met	Gly	Arg	Gly	Ser	Glu	Phe	Ala	Arg	Ala	Lys	Met		
					-30			-25					-20			
aaa	ctc	ctc	ttg	tgc	ttt	gcg	ttc	gcc	gcc	atc	gtc	atc	gga	gct		231
Lys	Leu	Leu	Cys	Phe	Ala	Phe	Ala	Ala	Ile	Val	Ile	Gly	Ala			
					-15			-10					-5			
cag	gct	ctc	acc	gac	gaa	cag	ata	cag	aaa	agg	aac	aag	atc	agc		276
Gln	Ala	Leu	Thr	Asp	Glu	Gln	Ile	Gln	Lys	Arg	Asn	Lys	Ile	Ser		
					1		5						10			
aaa	gag	tgc	cag	cag	gtg	tcc	gga	gtg	tcc	caa	gag	acg	atc	gac		321
Lys	Glu	Cys	Gln	Gln	Val	Ser	Gly	Val	Ser	Gln	Glu	Thr	Ile	Asp		
					15		20						25			

aaa gtc cgc aca ggt gtc ttg gtc gac gat ccc aaa atg aag aag		366
Lys Val Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys		
30	35	40
cac gtc ctc tgc ttc tcg aag aaa act gga gtg gca acc gaa gcc		411
His Val Leu Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala		
45	50	55
gga gac acc aat gtg gag gta ctc aaa gcc aag ctg aag cat gtg		456
Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu Lys His Val		
60	65	70
gcc agc gac gaa gag gtg gac aag atc gtg cag aag tgc gtg gtc		501
Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys Val Val		
75	80	85
aag aag gcc aca cca gag gaa acg gct tat gac acc ttc aag tgt		546
Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys Cys		
90	95	100
att tac gac agt aaa cct gat ttc tct cct att gat taa ttgtttgtta		595
Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp		
105	110	115
tttggctgaa ttttgacaat aaaggtacta tcgttatgta aaaaaaaaaaa		645
 aaaaaaactcg agcaccacca ccaccaccac tgagat		681
 <210> 37		
<211> 173		
<212> PRT		
<213> Tenebrio molitor		
 <223> Precursor Protein with His-tag, Clone 7.5		
 <400> 37		
Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro		
-55	-50	-45
 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg		
-40	-35	-30
 Gly Ser Glu Phe Ala Arg Ala Lys Met Lys Leu Leu Leu Cys Phe Ala		
-25	-20	-15
 Phe Ala Ala Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile		
-10	-5	1
5		
 Gln Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val		
10	15	20
 Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp		

25

30

35

Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly Val
 40 45 50

Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala Lys Leu
 55 60 65 70

Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val Gln Lys Cys
 75 80 85

Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr Asp Thr Phe Lys
 90 95 100

Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro Ile Asp
 105 110 115

<210> 38

<211> 543

<212> DNA

<213> Tenebrio molitor

<223> His-tagged, Signal minus, Clone 7.5

<400> 38

ttgttagcggtatggattccctcgtaggggataattttgtttacttaag 50

aaggagatat acc atg ggc agc agc cat cat cat cat cac agc 96
 Met Gly Ser Ser His His His His His His Ser
 -30 -25

agc ggc ctg gtg ccg cgc ggc agc cat atg gct agc atg act ggt 141
 Ser Gly Leu Val Pro Arg Gly Ser His Met Ala Ser Met Thr Gly
 -20 -15 -10

gga cag caa atg ggt cgc gga tcc ctc acc gac gaa cag ata cag 186
 Gly Gln Gln Met Gly Arg Gly Ser Leu Thr Asp Glu Gln Ile Gln
 -5 1 5

aaa agg aac aag atc agc aaa gag tgc cag cag gtg tcc gga gtg 231
 Lys Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val
 10 15 20

tcc caa gag acg atc gac aaa gtc cgc aca ggt gtc ttg gtc gac 276
 Ser Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp
 25 30 35

gat ccc aaa atg aag aag cac gtc ctc tgc ttc tcg aag aaa act 321
 Asp Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr
 40 45 50

gga gtg gca acc gaa gcc gga gac acc aat gtc gag gta ctc aaa 366
 Gly Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys
 55 60 65

gcc aag ctg aag cat gtc gcc agc gac gaa gag gtc gac aag atc 411

Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile
 70 75 80
 gtg cag aag tgc gtg gtc aag aag gcc aca cca gag gaa acg gct 456
 Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala
 85 90 95
 tat gac acc ttc aag tgt att tac gac agt aaa cct gat ttc tct 501
 Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser
 100 105 110
 cct att gat taa ctcgagcacc accaccacca ccactgagat 543
 Pro Ile Asp
 115

 <210> 39
 <211> 149
 <212> PRT
 <213> Tenebrio molitor

 <223> Mature protein with His-tag, Clone 7.5

 <400> 39
 Met Gly Ser Ser His His His His His Ser Ser Gly Leu Val Pro
 -30 -25 -20

 Arg Gly Ser His Met Ala Ser Met Thr Gly Gly Gln Gln Met Gly Arg
 -15 -10 -5

 Gly Ser Leu Thr Asp Glu Gln Ile Gln Lys Arg Asn Lys Ile Ser Lys
 1 5 10

 Glu Cys Gln Gln Val Ser Gly Val Ser Gln Glu Thr Ile Asp Lys Val
 15 20 25 30

 Arg Thr Gly Val Leu Val Asp Asp Pro Lys Met Lys Lys His Val Leu
 35 40 45

 Cys Phe Ser Lys Lys Thr Gly Val Ala Thr Glu Ala Gly Asp Thr Asn
 50 55 60

 Val Glu Val Leu Lys Ala Lys Leu Lys His Val Ala Ser Asp Glu Glu
 65 70 75

 Val Asp Lys Ile Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu
 80 85 90

 Glu Thr Ala Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp
 95 100 105 110

 Phe Ser Pro Ile Asp
 115

 <210> 40
 <211> 24

<212> DNA
<213> Tenebrio molitor

<223> Tm 12.84 upper primer with Bam-H1 site (Clones 2.2, 2.3, 3.4, 3.9, and 7.5)

<400> 40
cgccggatccc tcaccgacga acag 24

<210> 41
<211> 25
<212> DNA
<213> Tenebrio molitor

<223> Tm 12.84 lower primer with Xho1 site (Clones 2.2, 2.3, 3.4, 3.9, and 7.5)

<400> 41
gagaggataaa ctaattgagc tcgcc 25

<210> 42
<211> 24
<212> DNA
<213> Tenebrio molitor

<223> Tm 13.17 upper primer with Bam-H1 site

<400> 42
cgccggatccc tgaccgaggc acaa 24

<210> 43
<211> 25
<212> DNA
<213> Tenebrio molitor

<223> Tm 13.17 lower primer with Xho1 site

<400> 43
gagtggtaaa ctaactgagc tcgcc 25

<210> 44
<211> 481
<212> DNA
<213> Tenebrio molitor

<220>
<221> misc_feature
<222>
<223> Consensus of the Tm 12.84 Isoforms, 'n' defined as any nucleotide, 'Xaa' defined as any amino acid.

<400> 44
ggcacgagca aaa atg aaa ctc ctc ttg tgc ttt gcn ttc gcc gcc 46

Met Lys Leu Leu Leu Cys Phe Ala Phe Ala Ala			
-15	-10		
atc gtc atc gga gct cag gct ctc acc gay gaa cag ata cag aaa			91
Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys			
-5	1	5	
agg aac aag atc agc aaa gar tgc cag cag gng tcc gga gtg tcc			136
Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Xaa Ser Gly Val Ser			
10	15	20	
caa gag acg atc gac aaa gtc cgc aca ggt gtc ttg gtc gay gat			181
Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp			
25	30	35	
ccc aaa atg aag aag cac gtc ctc tgc ttc tcg aag ara act gga			226
Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly			
40	45	50	
gtg gca acc gaa gcc gga gac acc aat gtg gag gta ctc aaa gcc			271
Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala			
55	60	65	
aag ctg aag cat gtg gcc agc gac gaa gar gtg gac aag atc gtg			316
Lys Leu Lys His Val Ala Ser Asp Glu Glu Val Asp Lys Ile Val			
70	75	80	
cag aag tgc gtg gtc aag aag gcc aca cca gag gaa acg gct tat			361
Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala Tyr			
85	90	95	
gac acc ttc aag nnt att tac gac agt aaa cct gat ttc tct cct			406
Asp Thr Phe Lys Xaa Ile Tyr Asp Ser Lys Pro Asp Phe Ser Pro			
100	105	110	
att gat taa ttgtttgtta tttgrctgaa ttttgacaat aaaggtanta			455
Ile Asp			
115			
tcgttatgna aaaaaaaaaaaa aaaaaaa			481
<210> 45			
<211> 484			
<212> DNA			
<213> Tenebrio molitor			
<220>			
<221> misc_feature			
<222>			
<223> Consensus of Seq ID #44 with Tm 13.17, 'n' defined as any nucleotide, 'Xaa' defined as any amino acid			
<400> 45			
ggcanrnnnn aar atg aar ytn ctc tnn tgy ytn ryn tyc nyc ryy			46
Met Lys Leu Leu Xaa Cys Phe Ala Phe Ala Ala			
-15	-10		

ntn ntn rtc rna gyt cag gcy ctn acc gan gna car atn nag aaa Xaa Xaa Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys -5 1 5	91
nng aac aag atc agc aaa rar tgy car nan gnr nny gga gtg tcn Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val Ser 10 15 20	136
caa gag ayn atn rnc aaa gyy cgc ann ggt gnc tng gnn gay gat Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp 25 30 35	181
ccy aaa ntg aar nrn can gty yty tgc ntn ncn arg arn rcy ggn Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly 40 45 50	226
ntg gcn acn gaa ncn gga gan ryn rnn gtn gan gtr ytn arr gnn Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala 55 60 65	271
aag ntg arg nan gtn rcy rrc aac gac gaa gar ryn gan aar atc Lys Leu Lys His Val Ala Ser Asn Asp Glu Glu Val Asp Lys Ile 70 75 80	316
rtn nan aag tgc gyn gtc aag arr gny acn nyn gar gar acg gyn Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala 85 90 95	361
tny ray acy ttc aar nnt rty nnn ran ary aar ccn ran ttc tcn Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser 100 105 110	406
ccn rt t gat tra nynnyynnna ytngnnnrnr nttyranaat aaagnnnntn Pro Ile Asp 115	458
tnrtnnnrna aaaaaaaaaaaa aaaaaaa	484
<210> 46	
<211> 484	
<212> DNA	
<213> Tenebrio molitor	
<220>	
<221> misc_feature	
<222>	
<223> Consensus of Seq ID #45 with B1/B2, 'n' defined as any nucleotide, 'Xaa' defined as any amino acid,	
<400> 46	
ggcanrnnnn aar atg aar ytn ctc tnn tgy ytn ryn tyy nyc ryy Met Lys Leu Leu Cys Phe Ala Phe Ala Ala	46
-15 -10	

ntn ntn rtc nna gyt cag gcy ntn acy nan gna nan ntn nag nna Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys -5 1 5	91
nng nnc nar ayc agc rna rar tgy nar nnn gnr nny gga gtg tcn Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Val Ser Gly Val Ser 10 15 20	136
naa gan ryn atn rnn ara gyy cgc ann ggt gnc tng gnn gay gay Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp 25 30 35	181
ccy aaa ntg aar nnn can nty yty tgc ntn nyn arg rnn nyy grn Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly 40 45 50	226
ntr gyn rcn gaa ncn gga gan ryn rnn gyn gan ryr ytn arr gnn Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala 55 60 65	271
aag ntg ang nrn nnn nnn rnn ann rnn rar rar ryn rrr arr ntn Lys Leu Lys His Val Ala Ser Asn Asp Glu Glu Val Asp Lys Ile 70 75 80	316
ynn nrn arn nnn nnn nnn nng arn rnn nyn nnn rar rnr nnn nnn Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala 85 90 95	361
tnn ran nyn yyn aan nnn nny nnn rrr ann arn ccn rnn tyy tyn Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser 100 105 110	406
cnn ryt rnt trn nynnnnnnnn ynngnnnrnr nttyranaat aaagnnnytn Pro Ile Asp 115	458
tnrtnnnrna aaaaaaaaaaaa aaaaaaa	484
<210> 47	
<211> 484	
<212> DNA	
<213> Tenebrio molitor	
<220>	
<221> misc_feature	
<222>	
<223> Consensus of SEQ. ID #46 with AFP-3, 'n' defined as any nucleotide, 'Xaa' defined as any amino acid	
<400> 47	
ggcnnnnnnn aar atg aar ytn ctc ynn tgy ytn ryn yyy nyy ryy Met Lys Leu Leu Cys Phe Ala Phe Ala Ala -15 -10	46
ntn ntn ryc nnr ryy yan gcy ntn acy nan rna nnn nnn nag nnr	91

Ile Val Ile Gly Ala Gln Ala Leu Thr Asp Glu Gln Ile Gln Lys			
-5	1	5	
nng nny nar nnc agc rnn rnn tgy nar nnn gnr nny gga gtr tcn			136
Arg Asn Lys Ile Ser Lys Glu Cys Gln Gln Glu Ser Gly Val Ser			
10	15	20	
nna gan nyn ntn rnn arr gyy cgc ann ngt gnn nnr gnn gay gay			181
Gln Glu Thr Ile Asp Lys Val Arg Thr Gly Val Leu Val Asp Asp			
25	30	35	
ccy aaa ntg aar nnn can nyy yty tgc ntn nyn arg rnn nyy grn			226
Pro Lys Met Lys Lys His Val Leu Cys Phe Ser Lys Lys Thr Gly			
40	45	50	
ntn ryn rnn gnn nnn ggn gan nyn nnn gan nnn ntn arr rnn			271
Val Ala Thr Glu Ala Gly Asp Thr Asn Val Glu Val Leu Lys Ala			
55	60	65	
aar ntn ang nrn nnn nnn rnn rnn nnn rar rar ryn rrn rrn ntn			316
Lys Leu Lys His Val Ala Ser Asn Asp Glu Glu Val Asp Lys Ile			
70	75	80	
ynn nnn arn nnn nnn nnn nng arn rnn nyn nnn nar nnn nnn			361
Val Gln Lys Cys Val Val Lys Lys Ala Thr Pro Glu Glu Thr Ala			
85	90	95	
nnn ran nyn yyn aan nnn nny rrrn ann arn ycn nnn tnn nnn			406
Tyr Asp Thr Phe Lys Cys Ile Tyr Asp Ser Lys Pro Asp Phe Ser			
100	105	110	
cnn nyn rnn trn nnnnnnnnnn ynnrnnnnnn nnnnnnnnaat aaannnnnn			458
Pro Ile Asp			
115			
nnnnnnnnna aaaaaaaaaa aaaaaaa			484

<210> 48
<211> 136
<212> PRT
<213> Tenebrio molitor

<220>
<221> misc_feature
<222>
<223> General Consensus of Clones, B1, B2 and AFP-3, 'n' defined as any nucleotide, 'Xaa' defined as any amino acid

<400> 48
Met Lys Leu Leu Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
-15 -10 -5

Xaa Ala Xaa Thr Xaa Xaa Xaa Xaa Glx Xaa Xaa Xaa Xaa Xaa Ser Xaa
1 5 10

Xaa Cys Xaa Xaa Xaa Ser Gly Xaa Ser Glx Xaa Xaa Xaa Xaa Xaa Xaa
15 20 25 30

Arg Xaa Xaa Xaa Xaa Xaa Asp Asp Pro Lys Xaa Lys Xaa Xaa Xaa Xaa
35 40 45

Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Gly Xaa Xaa Xaa
50 55 60

Xaa Xaa Xaa Xaa Xaa Lys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Glu
65 70 75

Xaa Xaa Xaa Xaa Xaa Xaa Lys Cys Xaa Val Xaa Xaa Xaa Thr Xaa
80 85 90

Glx Xaa Xaa Xaa Xaa Xaa Xaa Lys Xaa Xaa Xaa Xaa Xaa Xaa Xaa
95 100 105 110

Xaa Phe Xaa Xaa Xaa Xaa Xaa Xaa
115